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| **Company Name:** BASF Corporation- Seneca Plant | **Permit Writer:** Kirk Schneider |
| **Permit Number:** 1820-0033-IB | **Date:** DRAFT |

**DATE APPLICATION RECEIVED:** November 16, 2016

**EXPEDITED REVIEW**

Expedited review form received on November 16, 2016 and the permit application was accepted for expedited review on November 29, 2016.

**FACILITY DESCRIPTION**

Chemical catalyst manufacturing and recycling facility. Recycling is provided for precious metals that are then used as raw materials in catalysts. The majority of operations are conducted in one central building. The flow of materials within the building is clockwise with precious metal-bearing material entering the receiving area by truck and finished catalyst leaving the shipping area by truck. The facility consists of two businesses: CCM and CCP. Within CCM, there are two main operations: pyromet, where the spent catalysts are melted to separate the precious metals, and hydromet, where wet chemistry is used to further refine the precious metals and make final products. CCP also consists of two main areas: zeolite manufacturing and process catalyst manufacturing.

**PROJECT DESCRIPTION**

Synthetic Minor Construction Permit. The purpose of this permit is to establish a 40 tpy PSD Avoidance limit for $SO_2$ emissions from the Alloy Conversion Process. This process would have either required a PSD permit or a synthetic minor permit at the time it was originally installed based on a new stack test but actual $SO_2$ emissions have not exceeded 40 tpy. This process is a batch process that uses oxygen to remove base metal impurities from the EAF alloy through the formation of oxides that are either removed as gases or trapped in the slag phase. This process is conducted in the Top Blown Rotary Converter (TBRC) (Title V permit Equipment ID 0610FE100). The TRBC consists of a steel shell lined with refractory brick that is mounted on a track. The barrel of the TBRC is rotated via a variable speed geared motor and is tilted by two hydraulic pistons. A water-cooled lance is located at the opening of the TBRC which is able to produce heat via combusting propane and oxygen and to provide pure oxygen for the conversion process. This process has no $SO_2$ control devices and the only control device associated with the process is Baghouse 0610DC010 which controls PM and Lead emissions.

Based on a new process metallurgist who questioned the basis that had previously been used for the TBRC $SO_2$ emissions (i.e., that only 15% of the sulfur was converted to $SO_2$), this facility performed a voluntary stack test on the TBRC to evaluate the $SO_2$ emissions from this unit. This equipment is part of Title V Permit Emission Unit 109 (High Grade Melt Room). Based on the stack test results, this facility found that $SO_2$ emissions were higher than originally projected and that a revised permit is needed to operate the TBRC at the desired production rate. This facility will take a federally enforceable 40 tpy PSD avoidance limit on this process. This facility determined that based on the stack test results and the desired operating rate that the potential to emit of $SO_2$ emissions from the TBRC would be 47.53 tpy. Emissions of all other pollutants emitted from this process will not change.

Emissions from the TBRC were originally calculated using the assumption that the process would utilize EAF alloy with a concentration of up to 1% sulfur and that 15% of the sulfur would be emitted as $SO_2$. It was discovered during recent the stack test, that $SO_2$ emissions from this equipment are higher than originally projected. Additionally, the sulfur content of the EAF alloy has increased over time and this facility proposes to increase the maximum sulfur content in the raw material and modify the emission calculation methodology based on the stack test results.

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## SOURCE TEST REQUIREMENTS

This facility did not get their voluntary stack test approved by the Department and will be required to perform an official Department approved test.

## SPECIAL CONDITIONS, MONITORING, LIMITS

To comply with the 40 tpy limit, this facility will track the sulfur content and mass of alloy being added, and use the results of the stack test to scale the emissions up or down using a linear relationship between sulfur in and $SO_2$ out based on the amount of sulfur added. During the voluntary stack test, 3.67 kg of sulfur was added (100 kg alloy @ 3.67%).

| FACILITY WIDE EMISSIONS | | | |
|---|---|---|---|
| **Pollutant** | **Uncontrolled Emissions (tpy)** | **Controlled (tpy)** | **Limited (tpy)** |
| PM | 877.0 | 36.0 | N/A |
| $PM_{2.5}$ | 437.0 | 18.0 | N/A |
| $PM_{10}$ | 877.0 | 36.0 | N/A |
| $NO_x$ | 167.0 | 118.0 | N/A |
| CO | 934.0 | 63.0 | N/A |
| $SO_2$ | 52.08 | 45.48 | 40 |
| VOC | 250.0 | 75.0 | N/A |
| Total HAP | N/A | 455.8 | 25 tpy |

## OPERATING PERMIT STATUS

This facility operates under a Title V Operating Permit and this permit will not effect this status.

| REGULATORY APPLICABILITY REVIEW | |
|---|---|
| **Regulation** | **Comments/Periodic Monitoring Requirements** |
| Section II.E - Synthetic Minor | This facility determined that based on the stack test results and the desired operating rate that the potential to emit of $SO_2$ emissions from the TBRC would be 47.53 tpy. This facility will take a federally enforceable 40 tpy PSD avoidance limit on the alloy conversion process to remove it from PSD applicablilty. |
| Standard No. 1 | The TBRC's Lance is not a fuel burning operation as defined in SC Regulation 61-62.1 and this proposed project does not include any new or additional equipment which would be considered a fuel burning operation. |

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| **REGULATORY APPLICABILITY REVIEW** | |
|---|---|
| **Regulation** | **Comments/Periodic Monitoring Requirements** |
| Standard No.3 (state only) | The TBRC does not combust any waste and the proposed project does not include any new or additional equipment which would combust any waste. |
| Standard No.4 | The High Grade Melt Room has been determined to be a process subject to Section VIII and has been assigned an existing PM limit. The TBRC has also been assigned an existing 20% opacity limit as specified by Section IX(B) because it was installed after 1985. These limits are specified in the existing Title V operating permit. |
| Standard No.5 | This regulation applies to specific processes. This facility does not have any of the processes specified in this regulation. |
| Standard No. 5.2 | The TBRC includes a water cooled Lance that combusts propane and emits $NO_x$. The Lance is exempt from this regulation as specified by Section I(B)(1) because it is exempt as specified by SC Regulation 61-62.1 Section II(B)(2)(h). |
| Standard No.7 | This facility is specified as one of the 28 specific industry types (28xx SIC Codes) for PSD applicability which specifies a PSD applicability trigger of 100 tpy. This facility emits PM, $PM_{2.5}$, $PM_{10}$, $SO_2$, CO, $NO_x$ and VOC which are PSD pollutants. The potential to emit considering federally enforceable controls and limits of these pollutants is less than 100 tpy except for $NO_x$ which makes it PSD major. |
| 61-62.6 | This facility does not have any processes capable of generating fugitive emissions. |
| 40CFR60 and 61-62.60 | This project does not have any equipment or processes applicable to any of the subparts contained in this regulation. |
| 40CFR61 and 61-62.61 | This project does not have any equipment or processes applicable to any of the subparts contained in this regulation. |
| 40CFR63 and 61-62.63 | This project does not have any equipment or processes applicable to any of the subparts contained in this regulation. |
| 61-62.68 | This facility does not store any of the regulated chemicals above the threshold quantities. |
| 40CFR64 | This facility has PSEU's subject to this regulation but the TBRC is not part of a PSEU that is subject to this regulation. |

| **AMBIENT AIR STANDARDS REVIEW** | |
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| **Regulation** | **Comments/Periodic Monitoring Requirements** |
| Standard No.2 | This facility has demonstrated compliance with this standard by using air dispersion modeling. See modeling summary dated November 30, 2016. |
| Standard No.7.c | This facility is located in Oconee County. No PSD minor source baselines for $PM_{10}$, $SO_2$ and $NO_2$ have been established for this county. |
| Standard No.8 (state only) | This facility has demonstrated compliance with this standard by using air dispersion modeling. See modeling summary dated November 30, 2016. |

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## PUBLIC NOTICE

This construction permit will undergo a 30-day public notice period to establish a Synthetic Minor Limit in accordance with SC Regulation 61-62.1, Section II.N. The comment period was open from December 20, 2016 to January 18, 2017 and was placed on the BAQ website during that time period.

## SUMMARY AND CONCLUSIONS

It has been determined that this source, if operated in accordance with the submitted application, will meet all applicable requirements and emission standards.